



Ectoparasites of chickens in Wukari Local Government Area of Taraba State, North-East Nigeria

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Abstract

Ectoparasites of chickens like lice, mites and ticks are a source of irritation to these domestic birds, sometimes it causes loss of weight leading to low productivity and in other cases kill the birds. Studies were conducted to identify the ectoparasites of chickens, its prevalence, risk factors and species composition in Wukari Local Government Area of Taraba State. The prevalence of the parasite was considered with respect to predilection sites, age and mode of life of the birds. A total of 500 chickens were randomly selected from 15 houses and one poultry farm out of which 220 (44.00%) were infested with one ectoparasite or more belonging to 4 species of chicken lice. These parasites were; *Menacanthus stramineus*, *Menacanthus cornutus* and *Menacanthus pallidulus* which are the body lice and *Cuclogaster heterographus* which is a head louse. Ectoparasites occur more on the feathers of the birds (51.33%) statistically significant at ($p < 0.05$) than the necks (32.43%) and legs (16.22%). None of the head lice encountered was found on the heads of the birds. Three species of the body lice encountered had similar occurrence and the highest infestation rate of 29.72%. There was no significant difference statistically in the occurrence of the three species of the body lice encountered at ($p > 0.05$). Adult birds (7-9 months) were more susceptible to the ectoparasitic infestation having the highest number of parasites (58.00%) while the free ranging birds had the highest infestation rate of 52.33%. The presence of lice on birds can lead to low productivity and eventually death. Farmers are advised to vaccinate and quarantine their infested birds to improve the health status and productivity of their birds which will in turn increase protein source and the income of the poultry owners in this area.

Keywords: Ectoparasites; chickens; Wukari; Taraba State.

Introduction

Proteins are essential to the structure and function of all living cells and poultry farming is one identified source of protein that does not only provide protein to humans but, a very good source of income to people in villages, towns and cities [1, 2, 3]. Poultry refers to domestic birds like, chickens, turkeys, ducks, guinea fowl, pigeons and more recently ostriches [1].

Poultry farming has economic significance which varies considerably and its production in many countries

has become increasingly specialized and integrated into a dynamic industry of major national and international importance. Chickens, guinea fowls and turkeys are all of great economic importance among which the chickens predominates [4].

Ectoparasites of chickens include lice, mites and ticks [5, 6]. They are a source of irritation to birds, sometimes kill the birds and in other cases they cause loss of weight. Heavy infestation on birds by these ectoparasites may cause reduction in productivity [7].

Considering the importance of chickens and the effect of the ectoparasites on their production, prevention of these infestations on chicken becomes more important than to control a serious build up.

To the knowledge of the authors, ectoparasites of chickens are unknown in this area. It is against this background that this research was embarked upon in Wukari Metropolis of Taraba State to identify available ectoparasites of chickens, and the ages and life-style of birds, in order to recommend suitable methods by which poultry production can be improved through reduction in the ectoparasitic infestation of birds and to provide baseline information on ectoparasites of these important domestic birds in this area.

Materials and methods

Study area

The study was conducted in Wukari Local Government Area of Taraba State. Wukari is in the southern part of Taraba State geographically situated in the northern Guinea-Savannah vegetation belt and has an annual rainfall of about 150-200 mm with a mean temperature of 18°C and maximum temperature of 38°C (Taraba State Government, Diary 2010). The total land area is about 60,291.82 sq km and lies within Latitude 6°30' N and 9°36' N and Longitude 9°10' E and 9°50' E.

Study sites

The sites for this study include; Old BB Ward, Adjuduku Ward, Eastern Ward (popularly called 'Angwan' East), Mission Quarters and Rice Meal Area (RMA) all within Wukari Metropolis. Three (3) houses were randomly selected from these five wards for the purpose of this study. The only poultry farm for the study is located about 3 km West of Kwararafa University Wukari, in Wukari LGA of Taraba State.

Sampling

Chicken is a common poultry birds in most Nigerian families and Wukari the study-area is not excluded, people keep chicken at home. Poultry birds were sampled from 15 houses and one poultry farm. During the sampling 500 chickens were randomly selected comprising 200 penned and 300 free ranging birds.

Collection of ectoparasites from chickens

Birds were carefully checked for the presence of ectoparasites, the checking lasted for about 10-15 minutes as described by Soulsby [8]. Their different predilection sites, face, neck, combs, legs, under the wings and back were searched for ectoparasites. The host's skin was also brushed with a fine comb after being rubbed with a piece of cotton soaked in ether. The use of a plastic comb and white paper allowed for thorough examination for the presence of ectoparasites. Parasites were also collected by forceful detachment using forceps as described by Soulsby [8] and preserved in well-labelled bottles with cap containing 70% alcohol. The age, life-style of birds and predilection sites of parasites were recorded in a book during the study period.

Identification of parasites

Keys and Diagrams by Chandler, Emerson and Soulsby [9-11], were consulted for the identification of the ectoparasites.

Results

Out of the 500 birds examined, 220 (44.00%) were infested with one ectoparasites or more belonging to the four known species of bird lice (Table 1). Three of the parasites encountered in the study area were body lice namely: *M. stramineus*, *M. cornutus* and *M. pallidulus*. The other species was a head louse which is *C. heterographus*. There was a similar but higher infestation rates observed among the body louse (Table 2). Feathers of the birds had the highest infestation 51.35% when compared with the Neck 32.43%, while the legs 16.22% had the least infestation as shown in Table 2. There was no parasite found on the heads of the birds, but some head lice were encountered on the feathers and legs (Table 2). The highest infestation of ectoparasites was recorded in the adult birds 58.00% and the young birds were the least infested 27.07% (Table 2). The prevalence of infestation varied with the modes of life of birds with free ranging birds having the highest infestation as shown in Table 3 ($p < 0.05$).

Table 1. Infestation rates of ectoparasites.

No. of Birds Examined	No. (%) infested	No. (%) Not infested
500	220 (44.00)	280 (56.00)

Table 2. Occurrence of ectoparasites on different predilection sites.

Species of ectoparasites	Predilection sites				
	Neck No. (%)	Feather No. (%)	Legs No. (%)	Head No. (%)	Total No. (%)
<i>Cuclotogaster heterographus</i>	0 (0.00)	5 (62.50)	3 (37.50)	0 (0.00)	8 (10.81)
<i>Menacanthus stramineus</i>	8 (36.36)	11 (50.00)	3 (12.50)	0 (0.00)	22 (29.72)
<i>Menacanthus cornutus</i>	8 (36.36)	11 (50.00)	3 (12.50)	0 (0.00)	22 (29.72)
<i>Menacanthus pallidulus</i>	8 (36.36)	11 (50.00)	3 (12.50)	0(0.00)	22 (29.72)
Total	24 (32.43)	38 (51.35)	12 (16.22)	0 (0.00)	74 (100)

Table 3. Infestation rates of ectoparasites in relation to age of birds.

Age-group (months)	No. examined	No. (%) infested	No. (%) not infested
Young (1-3 months)	133	36 (27.07)	97 (72.93)
Adolescent (4-6 months)	167	68 (40.72)	99 (59.28)
Adult (7-9 months)	200	116 (58.00)	84 (42.00)
Total	500	220 (44.00)	280 (56.00)

Table 4. Infestation rates of ectoparasites in relation to mode of life of birds.

Mode of life	No. examined	No. (%) infested	No. (%) Not infested
Free Ranging	300	157 (52.33)	143 (47.66)
Penned	200	63 (31.50)	137 (68.50)
Total	500	220 (44.00)	280 (56.00)

Discussion

Ectoparasites of chickens are a source of irritation to poultry birds and sometimes results in death. In this study the infestation rates of ectoparasite is quite high when compared to the works of James-Rugu [11]. However, it agrees with the findings of Gundiri *et al* [12] who also reported a higher infestation rates among domestic birds in their studies. Lice were the commonest ectoparasites encountered in the study area as no other ectoparasites were seen on the birds. The results revealed *Menacanthus* species of body lice as the commonest in the area under consideration. This is in keeping with the studies by Kumar, James-Rugu and Fabiyi [13-15], who both reported the species as the most common chicken lice infestation.

Lice are able to move in between feathers, they do that fast enough to hide from sight, this could be the possible reason for the high infestation on feathers of the birds examined [13]. The head lice encountered in this study were not found on the heads of the birds, but on the feathers and legs which is surprising. This is attributable to the fact that there are scanty feathers on the head forcing the lice to look for a hiding place on the feathers and legs. Unlike the human head lice which are site specific, the chicken head lice may not be site specific. This assertion was also made by Gundiri *et al* and Fabiyi *et al* [12, 17]. High infestation rates in adult birds may not be unconnected with the high prevalence of body lice encountered during the study, which could be due to the luxuriant nature and the large surface area of the birds' feather providing a hiding place for the lice. This corroborates the findings of James-Rugu and Harwood *et al* [14, 16] who reported higher infestation of ectoparasites on older birds than the young animals.

The free-ranging birds recorded higher infestation rates than the penned chicken; this high infestation could probably be due to the unrestricted movement of the birds. The free-ranging birds are also fun of the habit of scratching the ground with their legs in search for food where they could come in contact with these ectoparasites and this may contribute to the high infestation in this group of birds. Control of ectoparasites becomes difficult where there are free-ranging birds because, even if poultry owners treat their house and the birds against ectoparasites, the birds may eventually pick it outside and bring it home.

The owners of these birds were ignorant of the implications of the infestation on their birds by these ectoparasites and so do not check their birds regularly talk less of treating them, this was observed during the study and by the interviews conducted to the owners of these birds. The need to educate this people on the importance of poultry birds, the effect of ectoparasites on their productivity and the need to regularly check and treat their birds against infestation becomes inevitable. They should also be educated on the methodology used in treating and preventing infestation of birds and the importance of veterinary personnel in the maintenance of poultry birds. The use of pesticides is the main stay in the control of lice, there are however, other alternative approaches which include vaccine and quarantine this will go a long way in improving the health status and productivity of these birds and on the other hand increase protein source and the income of poultry owners in the study area.

Conclusion

In view of the findings it is possible to conclude that different species of lice represent common health and

welfare problems of chickens in Wukari Local Government Area. Further studies regarding the role of these ectoparasites in transmission of diseases to birds, comparative prevalence and load, and the importance of chickens as alternative hosts in different agro-ecology of Wukari Area are recommended so as to design an applicable control programme in Wukari and the country at large.

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